

L 09385-67 EWT(1) IJP(c)

ACC NR: AR6033780

SOURCE CODE: UR/0058/66/000/007/E070/E071

47.

AUTHOR: Cheban, A. G.; Rozneritsa, Ya. A.; Katana, P. K.; Prepelitsa, B. V.

TITLE: Effect of electric and magnetic fields on local states in semiconductors and dielectrics

SOURCE: Ref. zh. Fizika, Abs. 7E534

REF SOURCE: Uch. zap. Kishinevsk. un-t, no. 80, 1985, 63-98

TOPIC TAGS: electric field, magnetic field, semiconductor, dielectric, impurity center, impurity absorption, optical absorption

ABSTRACT: An investigation is made of the mechanism of thermal field ionization of impurity centers in semiconductors. A formula which takes into account the disintegration of impurity centers is derived for charge-carrier concentration as a function of electric field intensity. The effects of the electric and magnetic fields on the coefficient of optical absorption as a function of impurity centers is also investigated. It is shown that in the region of impurity absorption, as well as in fundamental absorption, the electrical field displaces the absorption edge toward lower frequencies. The effect of the magnetic field on the impurity absorption edge

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ACC NR: AR6033789

manifests itself in the appearance of oscillating magnetic absorption curves, which make it possible to determine the effective mass of the charge carriers. The effect of the magnetic field on the F' absorption band is also investigated. The frequency function of the absorption coefficient in photoionization of the F-center in the presence of the magnetic field is oscillatory in form. [Translation of abstract]

SUB CODE: 20/

Card 2/2 mba

ACC NR: AP6015452

(A)

SOURCE CODE: UR/0181/66/008/005/1374/1378

48
B

AUTHOR: Rozneritsa, Ya. A.; Cheban, A. G.

ORG: All-Union Scientific Research Institute of Current Sources, Kishinev (Vsesoyuznyy institut istochnikov toka)

TITLE: Theory of thermofield ionization of F-centers

SOURCE: Fizika tverdogo tela, v. 8, no. 5, 1966, 1374-1378

TOPIC TAGS: thermal ionization, multiphonon transition, F band, internal photoeffect, quantum yield

ABSTRACT: The authors examine multiphonon transitions caused by the interaction of an electron of the F-center with acoustic oscillations of the lattice and the thermal ionization of the excited self-consistent 2p-state of the F-center under the action of the operator of the perturbations for multiphonon transitions, with the formation of a zone electron. The shift of the theoretical curve of the quantum yield toward stronger fields than the experimental curve is due to thermal ionization as well as autoionization. An expression is derived for the probability of the multiphonon thermofield ionization. The temperatures at which the thermal ionization of the excited F-center plays a dominant role are examined. An expression is derived for the quantum yield of the internal photoeffect; this expression neglects the autoionization of the excit-

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ACC NR: AP6015452

ed self-consistent 2p-level of the F-center and the radiationless transitions. The experimental and theoretical curves of the dependence of the quantum yield for a KCl crystal on the intensity of the applied field are in good agreement. Orig. art. has: 25 formulas, 1 figure.

SUB CODE: 20/ SUBM DATE: 15Aug65/ ORIG REF: 007/ OTH REF: 004

BURDIYAN, I.I.; ROZNERITSA, Ya.A.; STEPANOV, G.I.

Thermoelectric properties of solid solutions of the system
AlSb--GaSb. Fiz. tver. tela 3 no.6:1879-1882 Je '61. (MIRA 14:7)

1. Tiraspol'skiy gosudarstvennyy pedagogicheskiy institut im.

T.G.Shevcheuko.

(Solutions, Solid) (Aluminum antimonide--Electric properties)
(Gallium antimonide--Electric properties)

24,760026.2532

24931

S/181/61/003/006/028/031
B102/B214

X

AUTHORS: Burdiyan, I. I., Rozneritsa, Ya. A., and Stepanov, G. I.

TITLE: The thermoelectric properties of solid solutions of the system AlSb-GaSb

PERIODICAL: Fizika tverdogo tela, v. 3, no. 6, 1961, 1879-1882

TEXT: Burdiyan together with others has published several papers on the system AlSb-GaSb. The present paper gives a report of the investigations on the thermoelectric properties of this system in the temperature range 120-900°K. The samples whose composition is given in the table had a size of 15.5×3 mm. A measurement of the temperature dependence of the differential thermo-emf α showed that for all compositions there is an initial increase in α with increasing temperature to about 400°K, and then on further increase of temperature up to 900°K the α value remains nearly constant. Only pure GaSb shows a maximum at 400°K after which α falls again to its original value or lower. As shown before, (A. I. Blum. FTT, I, 5, 766, 1959) α increases in p type GaSb with temperature till the impurity conduction range, then decreases with the appearance of carriers

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The thermoelectric properties of...S/181/61/003/006/028/031
B102/B214

of opposite sign changing sign at about 740°C which fact is to be attributed to the donor levels. The numerical results of measurements (α in $\mu\text{v}/\text{deg}$ and the mass ratio m_p/m_0) are also given in the table. The effective hole mass m_p is calculated according to the formula of Pisarenko:

$$\alpha = \frac{k}{e} \left[A + \ln \frac{(2\pi m kT)^{3/2}}{nh^3} \right]$$

The constant A depends on the scattering mechanism of the carriers. Taking into account the carrier scattering by acoustic vibrations and by the disordered structure of the alloy, and the fact that $u \sim T^{-3/2}$ it is found that for temperatures above room temperature the mean free path does not depend on the velocity, and so $A = 2$. Thus the effective hole mass was calculated for the range 350-700°C and the mean value (taking into account the errors of measurement) is given in the table. The measurements showed that 1) α increases with AlSb content in the system investigated, 2) α reaches a maximum value in the range 350-500°C for all compositions (this makes it possible to use these compositions in thermoelements working in this temperature range), and 3) the effective hole mass in the AlSb-GaSb

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S/181/61/003/006/028/031

B102/B214

The thermoelectric properties of...

mixture reaches higher values than in the individual components.. The authors thank Professor B. T. Kolomyets for his interest and discussions. There are 2 figures, 1 table, and 11 references: 9 Soviet-bloc and 2 non-Soviet-bloc.

ASSOCIATION: Tiraspol'skiy gosudarstvennyy pedagogicheskiy institut im. T. G. Shevchenko (Tiraspol' State Pedagogical Institute imeni T. G. Shevchenko)

SUBMITTED: July 13, 1960 (initially)
January 27, 1961 (after revision)

<u>Состав твердых растворов</u> <u>Composition of solid solution</u>	α_0 мкв/град. ($T = 300^\circ\text{K}$)	$\frac{m_p}{m_s}$
AlSb (1:0)	≈470 ¹	0.90 ± 0.10
3AlSb · 2GaSb (3:2)	475.	1.80 ± 0.20
AlSb · GaSb (1:1)	444	0.98 ± 0.10
2AlSb · 3GaSb (2-3)	397	0.88 ± 0.08
AlSb · 4GaSb (1:4)	307	0.70 ± 0.05
GaSb (0:1)	283	0.26^2

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L 25496-65 EPF(n)-2/EWT(l)/ETC(m)-6 IJP(c) WW

ACC NR: AP6009681

SOURCE CODE: UR/0181/66/008/003/0894/0899

49

B

AUTHOR: Rozneritsa, Ya. A.; Cheban, A. G.

ORG: All-Union Scientific Research Institute of Current Sources (Vsesoyuznyy nauchno-issledovatel'skiy institut istochnikov toka)

TITLE: Optic absorption in semiconductors with participation of impurity centers in an external magnetic field

SOURCE: Fizika tverdogo tela, v. 8, no. 3, 1966, 894-899

TOPIC TAGS: light absorption, absorption edge, semiconductor impurity, impurity center, impurity level, transition probability, valence band

ABSTRACT: To explain the experimentally observed shift of the edge of the intrinsic absorption of compounds of the $\text{Al}_x\text{Ga}_{1-x}\text{As}$ type with increasing impurity density, the authors analyze the effect that may be produced by application of an external quantizing magnetic field on a compensated semiconductor containing shallow donor local centers. Only allowed transitions are considered, and the analysis is restricted to optical transitions between the valence band and the ground state of the donor local center. The transition probability is calculated in a standard quantum-mechanical manner and it is shown that the absorption coefficient obtained from the transition probability is an oscillating function in the presence of a magnetic field. By determining the distance between neighboring maxima of this function it would be possible to determine directly the effective mass of the carrier in the band. Orig. art. has: 28 formulas.

SUB CODE: 20/ SUBM DATE: 09Aug65/ ORIG REF: 001/ OTH REF: 009
Card 1/1 CC

ROZNETINSKY, M.

Treatment of cutaneous tuberculosis. Cesk. derm. 28 no. 7:306-316 Sept
1953. (CIML 25:4)

1. Of the Second Dermatological Clinic (Head--Prof. K. Hubschmann, M.D.),
Prague.

ROZNIATOWSKI, T.

Providing Military Medical Service, bi B. Jablonowski and T. Rozniatowski.
Warsaw: Publishing House of the Ministry of National Defense, 1952.

ROZNIATOWSKI, T.

"Summer camps are for the happiness and health of children; advice to camp managers and educators" p. 12; "The cleanliness of fruit", p. 12, (ZDROWIE, Vol. 5, No. 6, 1953, Warszawa, Poland)

SO: Monthly List of East European Accessions, L.C., Vol. 3, No. 4, April, 1954

POZNIATOWSKI, T.

"Structure and functions of the respiratory system." p. 5 (Zdrowie, Vol. 5, No. 11, 1953,
Warsaw)

SO: Monthly List of East European Accessions, Library of Congress, Vol. 3, No. 6, June.
1954, uncl.

ROZNIATOWSKI, T.

Inflammation of the urethra, p. 2. (ZDROWIE, Warszawa, Vol. 6, no. 8, 1954.)

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, No. 6, Jan. 1955,
Uncl.

ROZNIATOWSKI, T.

"Blood morphology". p.7. (ZDROWIE Vol. 7, No. 1, 1955. Warszawa, Poland)

SO: Monthly List of East European Accession. (EEAL). LC. Vol. 4. No. 4.

April 1955. Uncl.

Rozniatowski, T.

ROZNIATOWSKI, T.

Prevention of varicose veins, p. 11. (ZDROWIE, Warszawa, Vol. 7, no. 2, 1955.)

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, No. 4, Jan. 1955,

Uncl.

POZNIATOWSKI, T.

Hygiene of childbirth, p. 12. (ZDROWIE, Warszawa, Vol. 7, no. 2, 1955.)

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, No. 6, Jan. 1955,
Uncl.

ROZHDESTOVSKIY, Tadeusz

Biological warfare; The threat and reality, by T. Rozhdestovskiy and Z. Zhukovskiy.
New York, USSR, 1960.
477 p. (JPRS #5229)
Translated from the Russian: Biologicheskaya voyna,угроза и действительность,
Moscow, 1959.
Original Polish title: Wojna Biologiczna, groźba a rzeczywistość, Warsaw, 1957.
Bibliography: p. 473-477.

KOŁAKOWSKI, T.

Be cautious with mushrooms, p. 5. (ZDROWIE, Warszawa, Vol. 6, no. 8, 1954.)

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, No. 5, Jan. 1955,
Uncl.

ROZNIATOWSKI, W.

An alkali main from the pulp mill in Klucze to the Wysoka
and Wiek cement factories. Przegl papier 21 no.3:88 Mr '65.

LACHOWICZ, Maria; ROZNIECKA, Danuta

Nonspecific syphilitic reactions in the light of personal research.
Polski tygod. lek. 13 no.13:466-468 31 Mar 58.

1. (Z Zakladu Mikrobiologii Slaskiej Akademii Medycznej; kierownik:
prof. Dr. Stefan Slopek). Adres autora: Zabrze, ul. Szczesne Boze 32a.

(SYPHILIS, diag.
nonspecific reactions (Pol))

AKT 1956/170 Dz. 74
BEKIERKUNIS, Adam; ROZNIECKA, Danuta

Studies on growth of *Mycobacterium tuberculosis* in solid cultures under lowered partial pressure of oxygen and increased partial pressure of carbon dioxide. *Polski tygod. lek.* 11 no.51:2154-2156 17 Dec 56.

1. (Z Zakladu Mikrobiologii Slaskiej A.M. w Rokitnicy; kierownik: prof. dr. F. Milgrom) Zakl. Mikrobiol. Lek. Sl. Ak. Med. w Rokitnicy.

(*MYCOBACTERIUM TUBERCULOSIS*, culture, eff. of low partial pressure of oxygen & high partial pressure of carbon dioxide (Pol))

(*OXYGEN*, effects, on *M. tuberc.*, low partial pressure of oxygen & high partial pressure of carbon dioxide (Pol))

(*CARBON DIOXIDE*, effects, same)

ROZNIĘCKA, D.

Investigations on chemotherapy of experimental rickettsial diseases.
Med.dosw. mikrob., Warsz. 3 no.2:149-157 1951. (CIML 21:1)

1. Of the Institute of Microbiology of the Silesian Medical Academy,
Rokitnica.

CA

III

Chemotherapy of experimental rickettsial diseases
D. Rosińska (Szkoła Akad. Med., Rokitnica, Poland)
Med. Doswiadczenia i Materiał. 3, 149-57(1951).—A series
of derivs. of $\rho\text{-NH}_2\text{C}_6\text{H}_4\text{COOH}$ (PABA) was tested in its
effect on infection caused by an intranasal administration
of *R. prowazekii* into white mice. All compds. were ad-
ministered subcutaneously in doses of 0.5 mg./g. body
weight, twice daily for the first 3 days of illness. These
doses showed no toxic effect. None of the compds. stopped
the infection completely. Untreated mice died after 3-4
days. Some mice that were treated with 5-ethyltetrahy-
dro-3-methyl-5-nitro-1,3,2*H*-oxazine-HCl, 2-methyl-2-nitro-
1,3-propanediol, or a Na salt derived from nitroioxane and
PABA survived over 10 days. Mice treated with Na salt
of salicylohydroxamic acid, Na salt of monobromosalicyclo-
hydroxamic acid, or Na salt of ρ -hydroxylaminobenzoic
acid survived 6-7 days. PABA-treated mice survived 5
days.

I. Z. Roberts

ROZNIECKI, Jerzy (Lodz, ul. Kosynierow Gdyskich 61.)

Pulmonary cancer with spinal metastases simulating pulmonary and
spinal tuberculosis. Gruzlicz 26 no.11:937-942 Nov '58.

l. Z Kliniki Ftyzjatrycznej A. M. w Lodzi Kierownik: prof. dr J.
Stopczyk.

(TUBERCULOSIS, PULMONARY, differ. diag.
pulm. cancer with spinal metastases simulating pulm. &
spinal tuberc. (Pol))

(TUBERCULOSIS, SPINAL, differ. diag.
same)

(LUNG NEOPLASMS, differ. diag.
same)

(SPINE, neoplasms,
same)

ROZNIECKI, Jerzy; TOMASZKIEWICZ, Lucyna

On properties and diagnostic and prognostic significance of not suitable for cultivation strains of Koch's bacilli visible under direct examination. Gruzlica 33 no. 11:1187-1192 N° 65.

1. Z Kliniki Ftizjatrycznej AM w Łodzi (pełniancy obowiązki Kierownika: doc. dr. med. W. Sosnowski.

ROZNIECKI, Jerzy; STRUPCZEWSKA-JANUSZOWA, Halina

Testing for active INH in the cerebrospinal fluid and blood
of patients with tuberculous meningoencephalitis. (Preliminary
communication) Gruzlica 31 no. 3:219-226 '63.

1. Z Kliniki Ftizjatrycznej AM i Szpitala im. dr J. Brudzinskiego
w Łodzi Kierownik Kliniki: prof. dr med. J. Stopczyk Dyrektor
Szpitala: dr med. S. Kuczborski.
(TUBERCULOSIS, MENINGEAL) (ISONIAZID)
(BLOOD CHEMICAL ANALYSIS)
(CEREBROSPINAL FLUID)

STRUPCZEWSKA-JANUSZOWA, Halina; ROZNIECKI, Jerzy

Studies on the role of the type of standard INH solution in the vertical diffusion method; on the effect of patient's serum on the growth of bacilli; and on the effect of the serum preservation time on quantitative changes in the content of INH. Gruzlica 31 no.1:41-48 '63.

1. Z Pracowni Bakteriologicznej Szpitala im. Dr J. Brudzinskiego i z Kliniki Ftizjatrycznej AM w Łodzi Kierownik Pracowni: dr mikrobiologii H. Strupczewska-Januszowa Dyrektor Szpitala: dr med. S. Kuczborski Kierownik Kliniki: prof. dr med. J. Stopczyk.

(ISONIAZID) (BLOOD CHEMICAL ANALYSIS)
(MYCOBACTERIUM TUBERCULOSIS)

SOSNOWSKI, Waclaw; ROZNIECKI, Jerzy

Alveolar or bronchial cancer? (Clinical and histological
picture of a case). Gruzlica 31 no.10:1073-1079 '63.

1. Z Kliniki Ftizjatrycznej AM w Lodzi Kierownik: prof. dr
med. J. Stopczyk.
(CARCINOMA, BRONCHIOLAR) (PATHOLOGY)
(DIAGNOSIS, DIFFERENTIAL)

ROZNIECKI, Jerzy

Clinical value of the determination of the active INH level
by the vertical diffusion method in tuberculous patients.
Gruzlica 31 no.10:1021-1027 '63.

l. Z Kliniki Ftizjatrycznej AM w Lodzi Kierownik: prof. dr
med. J. Stopczyk.
(TUBERCULOSIS, PULMONARY) (ISONIAZID)
(BLOOD CHEMICAL ANALYSIS)

ROZNIECKI, Jerzy

On the nature and clinical aspects of individual variations in the
inactivation of INH by the human organism. (A review). Gruzica 29
no.11:949-959 N '61.

l. Z Kliniki Ftizjatrycznej AM w Lodzi Kierownik: prof. dr med.
J. Stopczyk.

(ISONIAZID metab)

STOPCZYK, Jan; SOSNOWSKI, Waclaw; ROZNIEWSKI, Jerzy

Corticotherapy of acute and subacute pulmonary tuberculosis and
exudative pleurisy. Gruzlica 29 no.2:125-137 F '61.

1. Z Kliniki Ftyzjatrycznej Akademii Medycznej w Lodzi Kierownik:
prof. dr med. J. Stopczyk.

(TUBERCULOSIS PULMONARY ther)

(CORTICOTROPIN ther)

(ADRENAL CORTEX HORMONES ther)

OKUNTSOVA, Ye.A.; ROZNIKOV, L.N., dots., otv. red.; VOLOSHIN,
G.D., red.

[Projection drawing; a manual] Proektionnoe cherchenie;
uchebnoe posobie. Novosibirsk, Zapadno-Sibirske knizhnoe
izdatel'stvo, 1965. 113 p. (MIRA 18:11)

GOTSEV, B.; ROZNIKOV, P., red.

[Builders share their experiences] Stroitel obmenivaiutsia
opytom; sbornik statei. Moskva, Mosk. rabochii, 1964.
124 p. (MIRA 17:12)

VYDRIN, V.N.; ROENIKOVA, A.P.; STEBLEVA, A.T.

Relationship between sphalerite-galenite mineralization and
dolerite dikes (Yenisey Range). Dokl. AN SSSR 159 no.6:1309-1312
D '64 (MIRA 18:1)

1. Moskovskiy gosudarstvennyy universitet i Krasnoyarskoye geo-
logicheskoye upravleniye. Predstavлено akademikom V.I.Smirnovym.

ROZNO, A.I.; GERMAN, I.Z.

Case of essential progressive osteolysis. Ortop. travm. protez.
24 no.7:52-53 Jl'63 (MIRA 17:2)

1. Iz sanatoriya "Livadiya" (dir. N.P.Dadayan). Adres avtorov:
Yalta, sanatori Livadiya, korpus 30, kv.16.)

USSR/Human and Animal Physiology (Normal and Pathological).
Blood Circulation. General.

Abs Jour: Ref Zhur-Biol., No 17, 1958, 79552.

Author : Rozno, A.I.; Manukyan, M.A

Inst :

Title : Interrelationships Between the Anatomic and Electric
Axes of the Heart in Patients with Bronchial Asthma.

Orig Pub: Vrachebn. delo, 1957, No 7, 759-762.

Abstract: On 97 patients, ECG and roentgenokinograms were registered. In persons without hypertrophy, with beginning and expressed hypertrophy of the right ventricle, the heart was found to be horizontal more often than vertical; in $\frac{1}{2}$ the cases, the electric axis of the heart had a normal position. Along with the change of the T_3 wave and deepening

Card : 1/2

USSR/Human and Animal Physiology (Normal and Pathological).
Blood Circulation. General.

T

Abs Jour: Ref Zhur-Biol., No 17, 1958, 79552.

of the Q_3 wave, the author considers not an increase
but a decrease of the R_{V4} voltage as a sign of bronchial
asthma.

Card : 2/2

ROZNO, A.I.; YAKOVLEV, A.I.

Effect of treatment on the southern coast of the Crimea on the functional state of the heart in pneumosclerosis; according to data of electrokymography electrocardiography and phonography.
Vop. kur., fizioter. i lech. fiz. kul't. 29 no.2:122-126
Mr-Ap '64

(MIRA 18:2)

1. Terapevticheskaya klinika (zav. - prof. S.R. Tatevosov) i rentgenologicheskoye otdeleniye (zav. - kand. med. nauk A.I. Yakovlev) Instituta meditsinskoy klimatologii i klimatoterapii imeni Sechenova (dir. B.V. Bogutskiy), Yalta.

ROZNO, A.I.; YAKOVLEV, A.I (Yalta)

Celomic cysts of the pericardium. Vrach.delo no.11:143-145 N
'62. (MIRA 16:2)

1. Rentgenologicheskaya otdeleeniye (zav. - kand.med.nauk A.I.
Yakovlev) Instituta imeni I.M. Sechenova, Yalta.
(PERICARDIUM-TUMORS) (DIAGNOSIS, RADIOSCOPIC)

ROZNO, A.I.; MANUKYAN, M.A.

Relations between the anatomic and electrical axes of the heart in patients with bronchial asthma. Vrach.delo no.7:759-761 J1 '57.
(MLRA 10:8)

1. Kabinet funktsional'noy diagnostiki i rentgenodiagnostiki kurorta "Livadiya"
(ASTHMA) (HEART--ABNORMITIES AND DEFORMITIES)

ROZNO, A.I.

Comparative electrocardiographic and roentgenokymographic data in evaluating the functional condition of the heart. Vest.rent. i rad.
31 no.4:18-22 Jl-Ag '56. (MLRA 9:10)

1. Iz rentgenovskogo otdeleniya kurorta "Livadiya" (nach. P.Ye. Khrabrov)

(HEART DISEASES, diag.

ECG & electrokymography, comparision of data)

(KYMOGRAPHY

electrokymography in diag. of heart dis., comparison with ECG)

(ELECTROCARDIOGRAPHY, in various dis.

heart dis., comparison with electrokymography)

ZUBILIN, M.G.; ROZNO, A.I.; YAKOVLEV, A.I. (Yalta)

X-ray diagnosis of sclerosis of the pulmonary artery. Vrach. delo
no. 3:63-66 Mr '61. (MIRA 14:4)

1. Rentgenologicheskoye otdeleniye (zav. - kand.med.nauk A.I.
Yakovlev) instituta imeni I.M. Sechenova.
(PULMONARY ARTERY—RADIOGRAPHY) (SCLEROSIS)

GOL'DMAN, A.N.; ROZNO, A.I.

Cardiac electrokymography in hypertension and its changes
during health resort and climatic treatment. Vest.rent.i
rad. 40 no.5a34-39 S.O '65. (MIRA 1812)

1. Terapevтическая клиника (рук. - проф. С.Р. Татевосов) и
рентгеновское отделение (зав. ... канд. мед. наук А.И. Яковлев)
Института медико-клинической климатологии и климатотерапии имени
И.М. Сеченова, Ялта.

ZIL'BERBERG, V.I.; ROZNO, L.I.; GULYAYEV, A.I.; TSYRLIN, M.I.;
BOBKOV, L.S., inzh., retsenzent; MANUYKOV, P.N., inzh.,
red.

[Overall mechanization and automation of painting opera-
tions] Kompleksnaya mekhanizatsiya i avtomatizatsiya okra-
sochnykh rabot. Moskva, Mashinostroenie, 1965. 146 p.
(MIRA 18:6)

TSYRLIN, M.I.; ROZNO, L.I.

Reorganization of the section for painting automobile parts. Avt.
(MIRA 14:4)
prom. no. 1:40-42 Ja '61.

1. Gor'kovskiy avtozavod.
(Automobiles—Painting)

Nowacki, T.

Nonsteady state of temperature in a long circular cylinder with
heat moving over the lateral surface. Bul Ac Pol tech 12 no.5:
333-340 '64.

I. Department of Vibrations, Institute of Basic Technical Problems,
Polish Academy of Sciences, Warsaw. Presented by W. Nowacki.

SOLSKI, Paweł, doc. dr. inż.; BUCH, Alfred, doc. inż.; GORSKI, Eugeniusz, dr. inż.; KOCANDA, Stanisław, dr. inż.; WOJCIK, Franciszek, doc., dr. inż.; PYTKO, Stanisław, mgr. inż.; ROZNOWSKI, Tadeusz, mgr. inż.; KACZMAREK, Jan, doc. dr. inż.; KELLER, Włodzimierz, mgr. inż.; CEGIELSKI, B., mgr. inż.; ZIEMBA, Stefan, prof. zwycz. dr. inż.; JANECKI, Janusz, pplk. dr. inż.

The 1st Problematic Conference on: "The role and research methods of the subtersurface layer." Summary of major voices in the discussion. Przegl mech 21 no.13:411-413 10 Jl '62.

1. Politechnika, Warszawa (for Solski, Keller).
2. Instytut Mechaniki Precyzyjnej, Warszawa (for Buch).
3. Wojskowa Akademia Techniczna, Warszawa (for Kocanda, Ziembra and Janecki).
4. Politechnika, Szczecin (for Gorski).
5. Politechnika, Gdańsk (for Wojcik).
6. Akademia Górnictwa-Hutnicza, Krakow. (for Pytko).
7. Instytut Podstawowych Problemów Techniki, Polska Akademia Nauk, Warszawa (for Roznowski).
8. Instytut Ochrony Skrawniem, Krakow (for Kaczmarek).
9. Politechnika Poznań (for Cegielski).

BALO, Gyorgy, dr.; ROZOGONYI, Cecilia, dr.

Role of increasing of cortical inhibition in prevention of reactions after microparadoxical transfusions. Orv. hetil. 97 no.32:884-887 5 Aug 56.

1. A Debreceni Orvostudomanyi Egyetem Szuleszeti es Nogogyaszati Klinikajának (igazgató: Arvay, Sándor, dr. egyetemi tanár) közleménye.
(BLOOD TRANSFUSION)

microparadoxical, prev. of post-transfusion reactions by sodium bromide & analgesia ("un")

KEMULA, W.; ROZOLOWSKI, S.

Absorptiometric studies on the formation of molybdosilicic acids.
Bul Ac Pol chim 7 no.5:351-353 '59. (EEAI 9:9)

1. Department of Inorganic Chemistry, Warsaw University. Presented
by W.Kemula.
(Silicomolybdic acids) (Absorptiometer)

KOGAN, A.M.; ROZONOER, L.I.

Macroscopic description of kinetic processes. Dokl. AN SSSR 158 no.3:
566-569 S '64. (MIRA 17:10)

I. Institut khimicheskoy fiziki AN SSSR. Predstavлено akademikom L.I.
Sedovym.

ROZONFEL'D, I. L.

The Mechanism of the Protection of Iron from Corrosion by Sodium Nitrite. J. L. Rozonfeld. (Doklady Akademii Nauk. U.S.S.R., 1951, vol. 78, No. 3, pp. 523-529). [In Russian]. On the basis of experimental evidence it is concluded that the action of sodium nitrite as an inhibitor of corrosion is due to a retardation of anode processes and therefore it should be classified as an anode inhibitor. For this class of inhibitor effective protection can be obtained only when the anode process is completely stopped. With insufficient inhibitor a considerable part of the surface is screened but the velocity of corrosion on unprotected parts is increased.—v. o.

67475

16.9500

AUTHOR: Rozohoer, L.I. (Moscow) SOV/24-59-4-11/33TITLE: Integral Performance Parameters in the Theory of Automatic Control and Estimates of the Behaviour of a Function from the Known Value of a Functional

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Energetika i avtomatika, 1959, pp 93 - 96 (USSR)

ABSTRACT: It is assumed that the value of the functional is known from other evidence; the paper does not deal with the calculation of values of functionals. The space R of m variables y_1 to y_m is considered, in which a curve y is drawn with respect to the parameter α , which curve ends at points M_1 and M_2 on curves falling in a class Γ . Here, D is the minimum number of points within that space for all curves Γ that pass through R and through M_1 and M_2 . The functional $J(\alpha)$ is given such that, if α is a curve whose ends lie at A_1 and A_2 , and A is an arbitrary point on α such that α_1 and α_2 are the

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SOV/24-59-4-11/33

Integral Performance Parameters in the Theory of Automatic Control
and Estimates of the Behaviour of a Function from the Known Value
of a Functional

parts of α between A_1 and A and A and A_2 :
respectively, then $J(\alpha) = J(\alpha_1) + J(\alpha_2)$. It is known

that $J(\gamma) = I$.

The subsequent treatment follows routinely from the above
definitions; the second half of the paper deals with two
problems considered by Fel'dbaum (Refs 1,2), in both of
which Γ is composed only of piecewise smooth continuous
curves, and in the second of which the time-derivatives
of the coordinates are bounded. Explicit solutions are
obtained which cannot be improved upon unless more
information is given. There are 2 figures and 4 Soviet
references

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SUBMITTED: April 30, 1959

Card 2/2

10

16(1)

AUTHOR: Rozonoer, L.I.

SOV/20-127-3-10/71

TITLE: On Conditions Sufficient for Optimum

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 3, pp 520-523 (USSR)

ABSTRACT: Let the motion of a point of the phase space be described by
 $x = f(x, u, t)$, where $f = (f_1, f_2, \dots, f_n)$ and $u = (u_1, u_2, \dots, u_r)$. Let the function f and its two first derivatives be continuous. A piecewise continuous control $u(t)$ is sought, so that for a given initial value $x(T_0) = x^0$ the

$$\text{sum } S = \sum_{i=1}^n c_i x_i(T) \text{ attains an extremum value in the moment}$$

$t = T$. Such a control is called optimum. As a special case the considered problem includes the problems of control theory treated by B.V. Bulgakov [Ref 5] . The author applies the notions and methods of Pontryagin, Boltyanskiy and others [Ref 1,2,3] and with the aid of the maximum principle [Ref 1] he obtains sufficient conditions which must be satisfied by a

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On Conditions Sufficient for Optimum

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control $u(t)$ in order to be optimum in the above sense. The author thanks R.V. Gamkrelidze for some suggestions.
There are 5 Soviet references.

ASSOCIATION: Institut avtomatiki i telemekhaniki Akademii nauk SSSR
(Institute for Automatics and Telemechanics, AS USSR)

PRESENTED: January 8, 1959, by L.S. Pontryagin, Academician

SUBMITTED: December 22, 1958

Card 2/2

ROZONOER, L. I Cand Phys-Math Sci -- (diss) "Varied methods of investigating the quality of automatic control systems," Moscow, 1960, 16 pp, 200 cop. (Institute of Automatics and Telemechanics, AS USSR) (KL, 42-60, 111)

"APPROVED FOR RELEASE: 09/19/2001

CIA-RDP86-00513R001445720014-3

AYZERMAN, M.A. (Moskva), GUSEV, L.A. (Moskva), ROZONOER, L.I. (Moskva),
SMIRNOVA, I.M. (Moskva), TAL', A.A. (Moskva)

Finite automata. Part 2. Avtom. i telem. 21 no.3:359-368 Mr '60.
(Automatic control)

APPROVED FOR RELEASE: 09/19/2001

CIA-RDP86-00513R001445720014-3"

86215

S/103/60/021/012/002/007
B012/B064

16.9500 (1024,1031,1132)

AUTHORS: Ayzerman, M. A., Gusev, L. A., Rozonoer, L. I.,
Smirnova, I. M., Tal', A. A. (Moscow)TITLE: Methods of Working out a Finite Automaton the Time Pace of
Which Is Dependent Upon the Variation of the Input StatePERIODICAL: Avtomatika i telemekhanika, 1960, Vol. 21, No. 12,
pp. 1576-1594

TEXT: The papers of Refs. 1, 2 define such a dynamic system as a finite automaton the behavior of which is determined at the given instants (rhythms) 1, 2, ..., p by equation (1): $\kappa(p) = F[\kappa(p-1), \varphi(p-1)]$, where $\kappa(p)$ and $\varphi(p)$ are variables and $F(\kappa, p)$ an unambiguous function. The variable λ was assigned to the output of the automaton, and determined from formula (2): $\lambda(p) = \Phi[\kappa(p)]$ a new variable μ is introduced into equation (1) and formula (3) is obtained: $\kappa(p) = \mu(p-1)$, $\mu(p) = F[\kappa(p), \varphi(p)]$. Instead of (2), the more general formula (5) is written down: $\lambda(p) = \Psi[\kappa(p), \varphi(p)]$. The system expressed by equations (3) and (5) is called a sequential machine. In so far as (2) is a special case of (5),

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Methods of Working out a Finite Automaton S/103/60/021/012/002/007
the Time Pace of Which Is Dependent Upon the B012/B064
Variation of the Input State

the "sequential machine" comprises the notion of the "finite automaton". On the other hand there is a theorem which shows that a sequential machine is "no more efficient" than a finite automaton with an output converter (Ref. 4). This theorem reads: Every sequential machine M can be compared to a finite automaton A with an output transformer in such a way that for any state of M, a corresponding state of A will exist, where in the case of an arbitrary input sequence the output sequence of A in all cases of $p \geq 1$ represents the output sequence of M by a delay by one rhythm, and vice versa. This paper deals with sequential machines only, which realize the finite automaton, formula (6). (6) is obtained from (3) and (5) by eliminating μ and κ . It reads $\lambda(p) = F_1[\lambda(p-1), \phi(p)]$. The working cycles

1, 2, ..., p are clearly determined by the instants at which the input state is changed. It is assumed that the basic table of the (6) automaton is given. Three methods of realizing this basic table by means of the sequential machine are studied. The methods differ by the amount of information reaching the input of the automaton. The first method is that of D. D. Huffman (Ref. 5). The second method provides for the feed of an

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Methods of Working out a Finite Automaton S/103/60/021/012/002/007
the Time Pace of Which Is Dependent Upon the B012/B064
Variation of the Input State

additional information on the instants at which the input state has changed. In the third method, the automaton obtains the information through the input state at the respective moment and at some preceding moments. It is shown that this method warrants the most economic automaton. In this case it is possible not only to reduce essentially the number of necessary states of the automaton, but also to reduce as much as possible. There are 7 figures, 19 tables, and 7 references: 6 Soviet.

SUBMITTED: May 24, 1960

Card 3/3

9.3200

77828
SOV/103-21-2-8/14

AUTHORS: Ayzerman, M. A., Gusev, L. A., Rozonoer, L. I.,
Smirnova, I. M., Tal', A. A.

TITLE: Finite Automatons. I

PERIODICAL: Avtomatika i telemekhanika, 1960, Vol 22, Nr 2, pp
224-236 (USSR)

ABSTRACT: The authors give their point of view on the theory of finite automatons. A finite automaton is defined as a dynamical system which at certain discrete moments satisfies the following conditions: (1) The state of the system is selected from a finite number k of possible states (2) The state of the input to the system is selected from a finite number r of possible input states. (3) The state of the system at any considered moment is defined singularly by the state of the system and the state of the input at the preceding moment. The following designations are introduced:
(a) l' $2'$... k' are symbols of k possible systems

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Finite Automatons. I

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of states. Their totality $\{\chi\}$ is called a state alphabet; (b) P_1, P_2, \dots, P_k are symbols of the r possible input states. Their totality $\{P\}$ is called an input alphabet. According to the condition (3) the operation of a finite automaton is described by the expression

$$\chi(p) = F[\chi(p-1), p(p-1)], \quad (1)$$

where F is a function with a single value. The abstraction introduced by the concept of "finite automaton" singles out a class of systems in which the processes are described not by differential equations but by specific equations of type (1). A finite automaton may have l ($l \leq k$) possible output states designated as $\lambda_1, \lambda_2, \dots, \lambda_l$ or, in their totality designated as an output alphabet $\{\lambda\}$. In case of an automaton with an output,

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Eq. (1) must be supplemented by the "momentary" relationship given as

$$L(p) \in \Phi[\gamma(p)]. \quad (2)$$

Equation (1) may be represented by Table 1.

TABLE 1

	γ_1	γ_2	\dots	γ_n
p_1	γ_3	γ_5	\dots	γ_3
p_2	γ_1	γ_6	\dots	γ_6
p_r	γ_r	γ_r	\dots	γ_r

This table is called the basic table of finite automaton and may be set up in the following manner: a pair of symbols selected from alphabets $\{P\}$ and $\{\Gamma\}$ determines one case in the table. Assuming the symbol pair as

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$\rho(p-1)$ and $\kappa(p-1)$, and using Eq. (1), the value of $\kappa(p)$ may be determined and written for the above case. Equation (2) also defines a table

TABLE 2

x	z_1	z_2	z_3	z_4	z_5	z_k
λ	λ_2	λ_4	λ_1	λ_2	λ_1	λ_5

For a selected sequence of input symbols ρ , Table 3

TABLE 3

i	n	l	2	3	4	\dots
p	p_1	p_3	p_5	p_7	p_9	\dots
x	z_1	z_3	z_k	z_5	z_7	\dots

characterizes a sequence of symbols κ , in accordance with Eq. (1). In this band there is a corresponding

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ρ and λ for each moment t . The band is called a state band. Three symbols, $\lambda(p-1)$, $\rho(p-1)$, and $\lambda(p)$, defined by Eq. (1) are separated by a heavy line on Table 3. They are called a triad. When the system is defined by Eq. (1) and Eq. (2), then an output band, as represented by Table 4, must also be considered.

TABLE 4

t	1	2	3	4	5	...
p	p_1	p_2	p_3	p_4	p_5	...
λ	λ_1	λ_2	λ_3	λ_4	λ_5	...

When the input state does not vary with time the automaton is called autonomic. Equation (1) for this case has the form

$$\lambda(p) = F[\lambda(p-1), \rho(0)], \quad (3)$$

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where $\rho(0)$ may be considered a parameter. The operation of an autonomic automaton may be represented graphically by k points corresponding to system states and represented by arrows which show the direction of transition from one point to the other, in accordance with Eq. (3). Since a nonautonomic automaton has r input states, it can be represented by r various autonomic automata, under the assumption that the r input states do not vary. The totality of r graphs representing the above autonomic automata characterizes the non-autonomic automaton. Figure 1 shows an example of a totality of 3 graphs

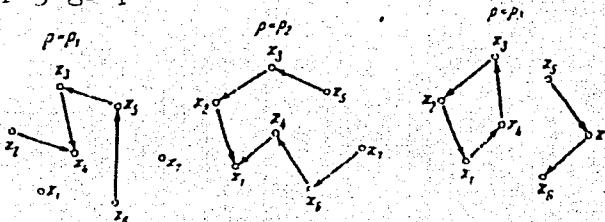


Fig. 1.

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Table 5 corresponds to the automaton characterized by Fig. 1.

TABLE 5

	x_1	x_2	y_3	x_1	x_3	y_4	x_2
p_1	x_1	x_4	x_4	x_1	x_3	y_3	x_7
p_2	x_1	x_1	x_2	x_1	x_3	y_4	x_6
p_3	x_4	x_1	x_2	x_3	x_7	x_4	x_6

The introduction of the concept of "finite automaton" poses a series of problems. The bands represented by Tables 3 and 4 are assumed to be infinite and cannot be selected. Selected are the algorithms which determine the symbol for any case of an infinite band. For the band represented by Table 3, the algorithms corresponding to the upper (p) and to the lower (χ) line are designated as A_p and A_χ , respectively.

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Finite Automatons. I

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Similarly, A_p and A_λ are the algorithms of the output band, represented by Table 4. For a given automaton, the analysis, i.e., the determination of A_K or A_λ in accordance with A_p , does not represent any scientific problem. On the contrary, the synthesis of an automaton, i.e., finding the Eq. (1) from the given band algorithms poses several problems. When A_K and A_p are known, the first problem consists in finding an algorithm proving that A_p and A_K are not contradictory, i.e., there are no contradictory triads in the band. Two triads are contradictory when their symbols $p^{(p-1)}$ and $\lambda^{(p-1)}$ are the same, but when symbols $\lambda^{(p)}$ are different. When A_p and A_K are not contradictory, an algorithm must be found determining all various triads of the band. Synthesis corresponding to the output band is a more complex problem. Here A_p and A_λ are known and the number of states k and function

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Φ in Eq. (2) have to be determined. It is stated that in case of finite state and output bands, the synthesis problem becomes less complex. To discuss the synthesis problem the following concepts are introduced:

- (1) The Symbol Converter. This is an abstract arrangement performing the transformation defined by Eq. (2), (2)

The Equivalent Automatons. On Fig. 2, atuomaton

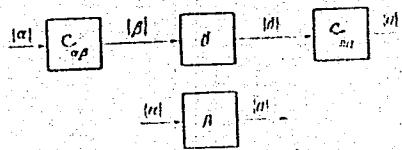


Fig. 2.

A is operating according to the input alphabet $\{a\}$ and the state alphabet $\{\alpha\}$. Automaton B has the input alphabet $\{\beta\}$ and the state alphabet $\{\gamma\}$. It is assumed that two symbol converters $C_{\alpha\beta}$ and $C_{\beta\alpha}$ may be selected

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in such a manner that for any sequence of input symbols from $\{a\}$, the sequence of symbols from the alphabet $\{a\}$, at the output of the combined system C_{ab} , B , C_{ba} , will be the same as the sequence of state symbols in A . In this case it is said that B is an image of A and may be written as.

$A \sqsubseteq B$ or $B \sqsupseteq A$.

When at the same time,

$A \sqsubseteq B$ and $A \sqsupseteq B$,

then A and B are equivalent automatons. (3) The Abstract Structure of a Finite Automaton. An arrangement of s input lines u_1, \dots, u_s and of n , generalized coordinates x_1, \dots, x_n is considered. At moments $0, 1, 2, 3, \dots, p$, each input and each coordinate has

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Finite Automatons. I

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only one of a finite number of values. The operation of such an arrangement is described by

$$x_i(p) = f_i[x_1(p-1), \dots, x_n(p-1); u_1(p-1), \dots, u_s(p-1)] \quad (i = 1, \dots, n) \quad (6)$$

Equation (6) is another form of Eq. (1). To one equation of type (1) correspond various equations of the type (6). The transition from Eq. (1) to the equivalent Eqs. (6) is called a selection or structure of a finite automaton, and Eq. (6) themselves are called an abstract structure (AS) of a finite automaton.

(4) The Net. This is a totality of AS, interconnected by means of symbol converters. Based on the above concepts, the authors arrive at the conclusion that a finite automaton may be designed by combining into a net other finite automata. The design of a multitude of automata from a small number of initial automata- "elements" is called abstract aggregation. A set of AS and converters is called complete, when by means of this set the networks designed are images of any selected

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automaton. A technically very important complete set is set-up of the following elements: (a) a binary delay element, described by the equation $x(p) = z(p-1)$, where x and z are selected from an alphabet comprising only two symbols, 0 and 1, for example; (b) a set of logic elements enabling performance of any logical function. It is shown that from the above set a net may be designed to be an image of any finite automaton. (To be continued). There are 4 figures; 6 tables; and 25 references 17 Soviet, 1 French, 7 U.S. The 5 most recent U.S. references are: Burks, A. W., Wright, J. B., Theory of Logical Nets, Proc. IRE, No. 4 (1953); Huffman, D. A., The Synthesis of Sequential Switching Circuits, Journ. Franklin Inst., Vol 257, Nr 3, 4 (1954); Burks, A. W., Wang, H., The Logic of Automata, Journ. Assoc. Comp. Mach., Vol 4, Nr 2, 3 (1957); Davis, M. D., Computability and Unsolvability, McGraw Hill, New York (1957); Copi, I. M., Elgot, C., Wright, J. B., Realisation of Events by Logical Nets, Journ. Assoc., Comp. Mach., 5, p 181, Nr 2 (1958).

SUBMITTED:

June 10, 1959

Card 12/12

AYZERMAN, M.A. (Moskva); GUSEV, L.A. (Moskva); ROZONOER, L.I. (Moskva)
SMIRNOVA, I.M. (Moskva); TAL', A.A. (Moskva)

Algorithmic insolvability of a problem on the recognition of the
representability of recursive events in finite automata.
Avtom. i telem. 22 no.6:748-755 Je '61. (MIRA 14:7)
(Automatic control)

AYZERMAN, M. A. (Moskva); GUSEV, L. A. (Moskva); ROZONOER, L. I. (Moskva);
SMIRNOVA, I. M. (Moskva); TAL', A. A. (Moskva)

Conversion of the time pace of sequential machines and synthesis
of switching circuits. Avtom. i telem. 23 no.11:1465-1491
N '62. (MIRA 15:10)

(Electric relays) (Switching theory)
(Automatic control)

S/044/62/000/005/031/072
C111/C333

AUTHOR: Rozonoer, L. I.

TITLE: On variational methods for examining the quality of
automatic control systems

PERIODICAL: Referativnyy zhurnal, Matematika, no. 5, 1962, 95,
abstract 5B429. ("Mezhdunar. federatsiya po avtomat.
upr. 1-y Mezhdunar. kongress po avtomat. upr."M., AN SSSR,
1960, 11 p.)

TEXT: This is a report containing the representation of papers
on the application of variational methods to automatic control systems,
which have been previously published (cf., e. g. RZhMat., 1961, 9B320,
9B321, 9B322, 11B224).

[Abstracter's note: Complete translation.]

Card 1/1

AYZERMAN, Mark Aronovich; GUSEV, Leonid Alekseyevich; ROZONOER,
Lev Il'ich; SMIRNOVA, Irina Mikhaylovna; TAL', Aleksey
Alekseyevich; KROLEV, N.A., red.; MURASHOVA, N.Ya.
tekhn. red.

[Logic. Automats. Algorithms] Logika. Avtomaty. Algoritmy.
(MIRA 17:3)
Moskva, Fizmatgiz, 1963. 556 p.

L 10252-63
GG/IJP(C)

EWT(d)/BDS AFFTC/ASD/APGC Pk-4/Pg-4/P1-4/Po-4/Pq-4

ACCESSION NR: AP300I084

S/0103/63/024/006/0744/0756

AUTHOR: Rozonoer, L. I. (Moscow)

14

TITLE: Variational approach to the problem of invariance of automatic control systems / Report at the Moscow Seminar on Nonlinear Problems in the Theory of Automatic Control, 16 November 1960

SOURCE: Avtomatika i telemekhanika, v. 24, no. 6, 1963, 744-756

TOPIC TAGS: calculus of automatic-control variations, invariance in automatic control

ABSTRACT: It is pointed out that the problem of invariance of automatic control systems is in fact a variational problem. Necessary and sufficient conditions of invariance in the linear systems are determined by means of variational methods used in the theory of optimum systems. Both the steady-state and the nonsteady-state conditions in the linear systems are considered. Orig. art. has: 49 formulas

ASSOCIATION: None

SUBMITTED: 20Aug62

DATE ACQD: 01Jul63

ENCL: 00

SUB CODE: 00

NO REF Sov: 009

OTHER: 000

Card 1/1 4/1963

L 18851-63

BDS

ACCESSION NR: AP3003733

S/0103/63/024/007/0861/0870

AUTHOR: Rozonoer, L. I. (Moscow)

41

TITLE: Variational approach to the problem of invariance. 2

SOURCE: Avtomatika i telemekhanika, v. 24, no. 7, 1963, 861-870

TOPIC TAGS: calculus of variations, automatic control, calculus, variation

ABSTRACT: Invariance conditions in nonlinear systems are developed in the article. Fundamental equations of a control system are expressed in terms of continuous functions whose partial derivatives are also continuous. Characteristics of Hamilton canonical systems whose Hamiltonians are linearly dependent on p are considered in detail. Finally, (X^0, T) -invariance of the control system is investigated, where X^0 is a set of possible initial data of the system and T is a set of instants which belongs with the time half-axis $0, \infty$. Orig. art. has: 35 formulas.

Card 1/2

ACCESSION NR: AP4041467

S/0103/64/025/006/0917/0936

AUTHOR: Ayzerman, M. A. (Doctor of technical sciences) (Moscow); Braverman, E. M. (Moscow); Rozonoer, L. I. (Moscow)

TITLE: Theoretical basis of the method of potential functions in the problem of teaching the automata to classify input situations

SOURCE: Avtomatika i telemekhanika, v. 25, no. 6, 1964, 917-936

TOPIC TAGS: automatic control, pattern recognition, perceptron, potential function

ABSTRACT: Automata are considered which recognize the class of a situation (yes, no, analog or digital computer output, characteristics, etc.) applied to their input. The set of situations that may occur at the automaton input is limited by a selected space X and a class $\psi(x)$ of functions describing the situations. Algorithms for teaching automata how to recognize the classes of input situations

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ACCESSION NR: AP4041467

are based on a 2-variable potential function of this form:

$$K(x, y) = \sum_{i=1}^{\infty} \lambda_i^2 \varphi_i(x) \varphi_i(y),$$

where $\varphi_i(x)$ ($i = 1, 2, \dots$) is a linearly independent set of functions; λ_i are real numbers which are nonzero with $i = 1, 2, \dots, N$. Two theorems -- of the finite number of error corrections and of the convergence of the algorithm in a finite number of steps -- are proven. The "Mark-1" perceptron (J. Hay, et al., Cybernetics Collection, no. 4, 1962, translated into Russian) is treated as a particular case of a class of schemes describable by the method of potential functions. Orig. art. has: 6 figures and 29 formulas.

ASSOCIATION: none

SUBMITTED: 00

ATD PRESS: 3074

ENCL: 00

SUB CODE: MA, DP

NO REF SOV: 003

OTHER: 006

6462

L 14371-65 EWT(d)/T/EED-2/EWP(1) Po-4/Pq-4/Pg-4/Pk-4 IJP(c) BB/GG
ACCESSION NR: AP4045343 S/0103/64/025/009/1307/1323

AUTHOR: Ayzerman, M. A.; Braverman, E. M.; Rozonoer, L. I.

TITLE: Probabilistic problem on teaching automata recognition of classes by the method of potential functions

SOURCE: Avtomatika i telemekhanika, v. 25, no. 9, 1964, 1307-1323

TOPIC TAGS: pattern recognition problem, automation, teaching, potential function method, learning automaton

ABSTRACT: The probabilistic approach to teaching automata to separate input situations into classes A and B is presented. It is assumed that the set of all situations at the input of an automaton form a space X and that probabilities $D_A(x)$ and $D_B(x) = 1 - D_A(x)$ of the point x belonging to the class A or B, respectively, are functions defined on the space X. Functions $D_A(x)$ and $D_B(x)$ are called the degree of certainty of the point x belonging to class A or B. The problem consists ... determining $D_A(x)$ and $D_B(x)$ on the entire space X from the points obtained during the learning process as well as from the information to which class (A or B) they are referred.

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L 14371-65

ACCESSION NR: AP4045343

Under the assumption that sets A and B intersect and that $D_a(x)$ and $D_b(x)$ can be expanded in finite series in a certain system of orthonormalized functions, the algorithm for constructing the function $\phi_i(x)$ which approximates $D_a(x)$ and $D_b(x)$ is presented on the basis of the method of potential functions developed earlier by the authors (Avtomatika i telemekhanika, v. 25, no. 6, 1964). It is shown that $\phi_i(x)$ is a random function, and it is proved that when i increases it converges to $D_a(x)$. The realization of the algorithm on a general purpose digital computer is considered. Orig. art. has: 67 formulas.

ASSOCIATION: none

SUBMITTED: 13Feb64

ENCL: 00

SUB CODE: MA

NO REF SOV: 004

OTHER: 000

Card 2/2

L 19481-65 ESD(dp)

ACCESSION NR: AP5001762

S/0103/64/025/012/1705/1714

AUTHOR: Ayzerman, M. A. (Moscow); Braverman, E. M. (Moscow); Rozonoer, L. I. (Moscow)

TITLE: The method of potential functions in the problem of generating the characteristic of a functional converter from random observations

SOURCE: Avtomatika i telemekhanika, v. 25, no. 12, 1964, 1705-1714

TOPIC TAGS: potential function method, converter characteristic generation, functional converter, function generation algorithm

ABSTRACT: The problem of generating the unknown function

$$y = f(x_1, x_2, \dots, x_n) \quad (1)$$

from the finite number of random inputs x_1, \dots, x_n and the corresponding outputs y is analyzed. Recently, this problem turned out to be very important in connection with the synthesis of self-adjusting systems which is based on the generation of plant characteristics

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during the control process. From the mathematical point of view, this is an ordinary interpolation problem, but solving it by the ordinary methods of the theory of interpolation is difficult. The authors propose the method of potential functions developed earlier (Avtomatika i telemekhanika, v. 25, nos. 6 and 9, 1964) for the solution of this problem. Assuming that there exists an orthonormal system of functions $\phi_1(x), \dots, \phi_k(x)$ such that function (1) can be represented by a finite series

$$f(x) = \sum_{j=1}^N c_j \cdot \phi_j \cdot (x), \quad (2)$$

and utilizing the potential function of the form

$$K(x,y) = \sum_{j=1}^N \phi_j(x) \cdot \phi_j(y), \quad (3)$$

two algorithms for constructing the sequence of functions $f_i(x)$ are presented. The convergence of the sequence $f_i(x)$ toward the

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function (1) when $i \rightarrow \infty$ is proved. The proposed algorithms can be realized on computers. These algorithms were applied to the solution of a system of algebraic equations. This application shows that the algorithms derived here can be utilized in solving certain problems of computational mathematics. The modification of the derived algorithms for generating converter characteristics in the presence of noise is considered. Orig. art. has: 34 formulas.

ASSOCIATIONS: none

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ENCL: 00

SUB CODE: MA

NO REF SOV: 004

OTHER: 003

ATD PRESS: 3159

Card 3/3

L-27896-66 EWT(d)/T IJP(c)

ACC NR: AP5027888

SOURCE CODE: UR/0103/65/026/011/1951/1954

AUTHOR: Ayzerman, M. A. (Moscow); Braverman, E. M. (Moscow); Rozonoer, L. I. (Moscow)

ORG: none

TITLE: The Robbins-Monro process and the method of potential functions

SOURCE: Avtomatika i telemekhanika, v. 26, no. 11, 1965, 1951-1954

TOPIC TAGS: Robbins Monro process, potential functions method

ABSTRACT: Ya. Z. Tsyplkin has shown (Avtomatika i telemekhanika, v. 26, no. 11, 1965, 1951-1954) that two of three algorithms for determining the characteristics of the functional generator on the basis of a finite number of randomly observed values presented by the authors of this article (Avtomatika i telemekhanika, v. 25, no. 12, 1964, 1705-1714) can be obtained by the Robbins-Monro method (the method of stochastic approximations). In the article, the authors analyze the interconnection between the method of potential functions and the Robbins-Monro process. They agree that, apparently, all problems to whose solution the method of potential functions has been applied can be reduced to the solution of a system of equations. However, this fact, in general, does not indicate that the Robbins-Monro process is applicable, or if applicable, that it is expedient. The following two statements are formulated: 1) Even in those cases when the problem can be reduced to the solution of a system of equations the algorithms of the method of potential functions often can not be reduced to the

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Robbins-Monro process; in addition, in many cases, these algorithms provide a more effective procedure (in the sense of the rate of convergence) for solving the system of equations. 2) Even in those cases when the Robbins-Monro process can be formally applied to the solution of the problem, the convergence of this procedure can constitute another, independent problem. A detailed substantiation of these statements is presented. Orig. art. has: 8 formulas.

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[LK]

SUB CODE: MA/ SUBM DATE: 23Jul65/ ORIG REF: 005/ OTH REF: 004/ ATD PRESS:
4133

Card 2/2 CC

ACC NR: AT6022668

SOURCE CODE: UR/0000/66/000/000/0003/0008

AUTHOR: Ayzman, M. A.; Braverman, E. M.; Rozonoer, L. I. (Doctor of technical sciences)

ORG: none

TITLE: The problem of teaching machines to recognize external situations

SOURCE: Moscow. Institut avtomatiki i telemekhaniki. Samoobuchayushchiyesya avtomatičeskiye sistemy (Self-instructing automatic systems). Moscow, Izd-vo Nauka, 1966, 3-8

TOPIC TAGS: intelligent machine, pattern recognition, character recognition, artificial intelligence, perceptron, teaching machine

ABSTRACT: A method for machine recognition of external stimuli, based on so-called *potential functions*, is proposed in this paper dealing with artificial intelligence. Individuals can recognize events and patterns, and teach others to do so, frequently without being able to explain *how* the process of recognition comes about. For instance, an illiterate person can be shown letters "a" and "b" and taught to recognize these letters irrespective of their shape. This process of information transfer is therefore based not on explanation, but on demonstration. This technique can be applied to learning, pattern-recognition machines, designed to respond to audio or visual com-

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mands. The problem of teaching the automaton to classify correctly a given input can be defined either in the deterministic or in the probabilistic domain. In the deterministic domain, an input is classified as belonging to a certain set, hence the training process consists of supplying the machine with a set of inputs and the corresponding outputs. Consider a mathematical space of inputs X containing a finite number of points (or Euclidian with a finite number of dimensions), constructed such that each point corresponds to a defined input. Then space X contains a set of points corresponding to a set of inputs and the problem of recognizing a given input set reduces to construction of a hyperplane to separate the sets, if the boundaries of the individual point sets are unknown, but it is known that certain points belong to a given set. The hyperplane can be mathematically expressed in terms of a *separating function* existing in space X . This function assumes positive values for points belonging to one set, and negative values for points belonging to the second set. In the probabilistic domain, not the actual points in space X , but probability functions which indicate that a given point belongs to a given set, are recognized during the learning process. The automaton operating in this domain determines the probability that an input belongs to a certain set. The recognition of inputs by operating a machine in either of two domains is only possible if certain constraints are imposed on the inputs. These constraints need not be severe; for instance, a condition that the desired function not be excessively non-smooth might be necessary. The separating function for a space X is defined as

$$\Psi(x) = \sum_{i=1}^N c_i \varphi_i(x),$$

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Then a potential function can be considered, given by

$$K(x, x^*) = \sum_{i=1}^{\infty} \lambda_i^2 \varphi_i(x) \varphi_i(x^*).$$

This function is valid anywhere in space X . Assigning positive values for the region A and negative values for the region B , the general potential field can be constructed in accordance with

$$K_1(x) = \begin{cases} K(x, x^{(1)}), & \text{if } x^{(1)} \in A \\ -K(x, x^{(1)}), & \text{if } x^{(1)} \in B, \end{cases}$$

Theorem 1: If there exists a function (ψ) which strictly separates sets A and B , i.e.,

$$\begin{aligned} \psi(x) > \varepsilon, & \text{ if } x \in A; \\ \psi(x) < -\varepsilon, & \text{ if } x \in B, \end{aligned}$$

where $\varepsilon > 0$, and which satisfies the main hypothesis, then irrespective of the nature of the point sequence from A and B , only a finite number of errors, smaller than some number m , will occur during the recognition of this sequence. *Theorem 2:* Let p be the probability of the automaton making an error after the learning phase has been completed. Assuming that the conditions of *Theorem 1* are satisfied, that the statistics of recognition are such that recognitions are independent, and that for both re-

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gions A and B the probability of a point occurring in these regions is distinct from zero, then for any $\epsilon > 0$ and $\delta > 0$, the probability that $p < \epsilon$ is greater than $1-\delta$, if

$$N_0 > \frac{\ln \delta}{\ln(i - \epsilon)}.$$

This theorem determines the convergence of the algorithm for the potential functions to the separating function in a finite number of steps with any desired accuracy. This algorithm for the potential functions is realized as a special case in the perceptron. The authors proceed to describe the application of potential functions to the probabilistic domain, and in conjunction postulate a third theorem. They conclude that it is in principle possible to apply the demonstration technique to training of automata and that a rigorously scientific, rather than an empirical, approach to the solution of this problem is possible.

SUB CODE:06,05/ SUBM DATE: 02Mar66/ ORIG REF: 001/ OTH REF: 004

Card 4/4

KAVERINA, N.V.; MIRZAYAN, R.S.; ROZONOV, Yu.B.

Mechanism of the action of monoamine oxidase inhibitors on the nervous regulation of coronary circulation. Farm. zh. Lek. 28 no.6:689-694 N-D '65. (MIRA 19:1)

1. Laboratoriya farmakologii serdachno-sosudistoy sistemy (zav. - prof. N.V.Kaverina) Instituta farmakologii i khimioterapii AMN SSSR, Moskva.

USSR/Diseases of Farm Animals - General Problems.

R-1

Abs Jour : Ref Zhur - Biol., No 4, 1958, 16898

Author : Rozanova, A.

Inst : -
Title : Treatment of Diseases of Animals with Mud from the Ul'dzhay
Lake.

Orig Pub : S. kh. Sibiri, 1957, No 5, 58-60

Abstract : A good therapeutic effect of mud-treatment in acute, sub-acute, and chronic aseptic bursitis, synovitis, tendovaginitis, dermatitis and periarticular fibrosis is reported. Before use, the mud was heated to 50-60°C. and a 6-8 cm. thick layer of it was applied to the diseased part of the body of the animal. In order to achieve more thorough warming of tissues and concentration of heat in a definite part of the body, the mud-treatment was used in combination with venous congestion.

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ROZONOVA, A. P.

"Experimental and Clinical Investigations of the Therapeutic Action of the Muds of the Uldza Sea During Certain Diseases of Animal Extremities." Cand Vet Sci, Omsk State Veterinary Inst, Min Higher Education USSR, Omsk, 1955. (KL, No 12, Mar 55)

SO: Sum. No. 670, 29 Sep 55—Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (15)

15-57-4-4111

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 4,
pp 8-9 (USSR)

AUTHORS: Sarycheva, T. G., Sokol'skaya, A. N., Rozanova, Ye. D.

TITLE: The Boundary Between the Visean and Tournaisian Stages
in the Kuznets Basin (O granitse vizeyskogo i turney-
skogo yarusov v Kuznetskom basseyne)

PERIODICAL: Sov. geologiya, 1955, Sb 45, pp 144-160.

ABSTRACT: New studies of the fossils and lithology of the Lower
Carboniferous rocks of the Kuznetsk Basin introduce
several changes in the existing stratigraphic nomen-
clature (Rotay, A. P., Tsentr. n.-i. geol.-razved.
in-ta, 1938, vyp. 102, 3-98). The horizon is taken as
the fundamental stratigraphic subdivision. At the base
of the Visean, together with the Pod'yakova zone of
Rotay, the author recognizes the Mozhukha horizon,
which is lithologically extremely variable in the
different regions of the Kuznets Basin. Tuffaceous
beds of variable thickness occur everywhere at the base

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15-57-4-4111

The Boundary Between the Visean and Tournaisian (Cont.)

of this horizon. Limestones with normal marine fauna occur only in the northern half of the basin and in the Salair region. A fundamental facies differentiation appeared in separate regions of the Kuznets Basin even during deposition of the continuous beds of Tournaisian limestones. The shallower water parts of the basin are clearly traced by the distribution of algal, oolitic, and other types of shallow-water calcareous sediments in them, and also by the systematic change in the groups of fossils occurring in them. In the shallow-water parts of the sea, groups of brachiopods are distinguished by their paucity. The predominant forms are Schuchertella, Chonetes, Athyris, and Camarotoechia. Representatives of the last genus were able to carry over into more unfavorable environments. As a consequence of this, identical facies of different ages show a similarity in the general features of the fossil groups, a fact that may be the cause of existing errors in determining the stratigraphic position of any particular sequence of beds. However, the specific content of groups of different ages is generally distinctive.

T. G. S.

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ROZONOVA, Ye. D., Cand. Geol-Mineral. Sci. (diss) "Lithology,
Facies and Conditions of Formation of Lower Visean Deposits of
Kuznets Basin," Moscow, 1961, 16 pp. (Moscow State Univ.) 150
copies (KL Supp 12-61, 259).

TEODOROVICH, G.I.; ROZONOVА, Ye. D.

Sedimentation intervals in the terrigenous formations of the
upper Tournai and lower Vise in Tatarstan. Izv. AN SSSR. Ser.
geol. 24 no.6:48-60 Je '60. (MIRA 14:4)

1. Institut geologii i razrabotki goryuchikh i iskopayemykh AN
SSSR, Moskva. (Tatar A.S.S.R.—Geology, Stratigraphic)

TEODOROVICH, Georgiy Ivanovich; SOKOLOVA, Natal'ya Nikolayevna;
ROZONOVA, Yelena Dmitriyevna; BAGDASAROVA, Marina Vartanovna;
AMMOSOV, I.I., doktor geologo-miner. nauk, otv. red.;
NIKOLAYEVA, I.N., red. izd-va; SIMKINA, G.S., tekhn. red.

[Mineralogical and geochemical facies of the terrigene
deposits of the lower Carboniferous in the greater part of the
Ural-Volga region from the viewpoint of their oil and coal
resources] Mineralogo-geokhimicheskie fatsii terrigennykh otlo-
zhenii nizhnego karbona osnovnoi chasti Uralo-Volzhskoi ob-
lasti v sviazi s ikh neftenosnost'iu i uglenosnost'iu. Moskva,
Izd-vo Akad. nauk SSSR, 1962. 172 p. (MIRA 15:5)
(Ural-Volga region--Geology, Stratigraphic)